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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/655,359

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Pere Josep Canti

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02/18/2005

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/655,359

Applicant(s)

CANTI ET AL.

Examiner

LAM S. NGUYEN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/23/2004</u> | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Terminal Disclaimer***

The terminal disclaimer filed on 11/23/2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US 6641242 patent has been reviewed and is accepted. The terminal disclaimer has been recorded. As a result, the double patenting rejections have been withdrawn.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 26, 28, 30-36, 38-39, 41, 43, 45, 47-50, 52, 53, 55-56, 58, 60-66, 68-69, 71 are rejected under 35 U.S.C. 102(e) as being anticipated by Jones et al. (US 6601941).

**Referring to claims 26, 38, 43, 52, 56, 68:**

Jones et al. disclose a method of managing temperature in a printer, said method comprising the steps of:

preprocessing a file into a plurality of swaths and preprocessing each

of swaths into a plurality of cells (*FIG. 6: "Divide swath into  $N$  equal size groups of print data", wherein  $N$  groups are considered as  $N$  cells. FIG. 7 and column 6, lines 14-16: "Each swath is broken into several smaller groups"*);

calculating an estimated peak temperature for each printhead in printing each of said plurality of cells (*column 1, line 67 to column 2, line 3 and column 2, line 42-45: A peak temperature for printing a group (cell) is estimated based on analyzing drop counts in the group. FIG. 7: Estimating a plurality of maximum temperatures each associated with a respective one of groups; Column 6, lines 14-20: "Within each group the power required to ejected ink is computed and used to look up chip thermal parameters" and the parameters are used to predict the change in temperature for each group*); and

printing said swath in response to said estimated peak temperature for each printhead in printing, each of the cells being below a predetermined maximum temperature (*FIG. 6: "Printing without any shingling change" if  $T_{max}$  is less than or equal  $T_L$ . FIG. 7: Print the swath without increasing the predetermined number of passes if temperature of each of the groups is not exceeded (or below) a predetermined limit temperature*).

**Referring to claims 28, 45, 58, 69:** further comprising:

calculating an ink drop estimate for printing each cell (estimated density for the cell) and employing the ink drop estimate for printing each cell to calculate the estimated peak temperature for each printhead in printing each cell (*column 1, line 67 to column 2, line 3 and column 2, line 42-45: A peak temperature for printing a group is estimated based on analyzing drop counts in the group*).

**Referring to claims 30-34, 41, 47-48, 55, 60-64, 71:** further comprising:

dividing a pass of each printhead in printing said swath into a number of sub passes or reducing number of ink drops in each sub-pass in response to said estimated peak temperature for any printhead in printing any of the cells being greater than said predetermined maximum temperature (*FIG. 7: "Estimating a plurality of maximum temperature of the print chip in printing the swath in a predetermined number of passes of the printhead, each of said maximum temperature being associated with a respective one of said groups"*), wherein a number of ink drops printed during each said sub-pass is substantially less than a number of ink drops printed during a pass, wherein printing a sub-pass in a height that is substantially similar to the printing pass, and wherein a recording medium is not advanced between each sub-pass of said number of sub-passes, (*FIG. 7: "If at least one of the maximum temperature exceeds a predetermined limit temperature, increase the predetermined number of passes of the printhead for printing the swath"*).

**Referring to claims 35, 49, 65:** A system for managing temperature in a printer, comprising:

a memory, at least one printhead (Abstract), and an adaptive thermal print swath servo ("ATPSS") module to preprocess a file stored in said memory into a plurality of swaths, wherein said ATPSS module is further configured to calculate an estimated peak temperature for each printhead in printing each cell and to print said swath with said printhead in response to said estimated peak temperature for each printhead in printing each cell being below a predetermined maximum temperature (*Abstract and FIG. 1: Memory 26, printhead 12, and microcontroller 24*).

**Referring to claims 36, 39, 50, 53, 66:** wherein the ATPSS module is further configured to calculate an estimated ink drop density for each cell wherein the estimated ink drop density is utilized to calculate the estimated peak temperature (*column 1, line 67 to column 2, line 3 and column 2, line 42-45: A peak temperature for printing a group is estimated based on analyzing drop counts in the group (drop density of the group)*).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27, 29, 37, 40, 42, 44, 46, 51, 54, 57, 59, 67, 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (US 6601941) in view of Kojima (US 5999204).

Jones et al. disclose the claimed invention as discussed above except the step of measuring the temperature of each printhead prior to printing said swath and employing said measured temperature as an initial temperature in calculating said estimated peak temperature for each printhead in printing a first cell of the swath, wherein the temperature of each printhead prior to and after printing each cell in the swath is measured by a temperature sensor (**Referring to claims 37, 51, 57, 67**), and wherein calculating the estimated peak temperature from a sum of a product or quotient of the estimated ink drop or density and a constant and an initial temperature of each printhead prior to printing each the cell (**Referring to claims 29, 40, 42, 46, 54, 59, 70**).

Kojima disclose a method for controlling temperature in a printer. The method comprises the steps of measuring a temperature of each printhead prior to printing a region with thermistors (*FIG. 4: "Initial value of temperature"*), employing the measured temperature as an initial temperature in calculating an estimated peak temperature for each printhead in printing the region (*FIG. 4: "Calculate a predicted value of temperature for each region from the representative value of the image data within that region and an initial value of temperature as detected with thermistors"*), wherein the estimated temperature for each region is calculated by summing or adding the representative value for the image data within that region (considered as a product or quotient of the density and a proportionality constant  $k$ ) and the initial value of temperature (*column 7, line 44-48 and column 9, line 50 to column 10, line 13*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the method for controlling the temperature in the printer disclosed by Jones et al. such as measuring the temperature of each printhead prior to printing a swath and employing the measured temperature as an initial temperature in calculating an estimated peak temperature for each printhead in printing a first cell of the swath as disclosed by Kojima. The motivation of doing so is to perform temperature compensation on the image data of pixels in order to produce records without uneven image densities and to form recorded images of high quality at high speed as taught by Kojima (*column 3, line 49-53*).

#### ***Response to Arguments***

Applicant's arguments filed 11/23/2004 have been fully considered but they are not persuasive.

First of all, the applicants argued that *"Estimating a single peak temperature for a single printhead at a future point in time is not equivalent to "calculating an estimated peak temperature for each printhead in printing each of a plurality of cell" of a swath"*. In response, the examiner points out that Jones, as shown in FIG. 6-7 and discussed above, teaches estimating the maximum temperature of each group (cell) of a plurality of groups divided/broken from a swath before printing the plurality of groups (or the swath). Secondly, the applicants argued that Jones' teaching of dividing a swath into a plurality of groups is not the same as division of a swath into cells, such as cells of four inches in length. In addition, the applicants, based on a definition of the term "cell" taken from page 134 of Merriam-Webster's Seventh New Collegiate Dictionary (G. & C. Merriam Company, Springfield, Massachusetts, copyright 1971), concludes that the term "cells" refers to a discrete or compartmentalized area or zone, and does not refer to interlaced division of elements across a swath, as described by Jones. In response, the examiner, based on the applicants' example (page 24, 2<sup>nd</sup> paragraph), shows that a zone/area printed by 50% of the dots (selected from a checkerboard pattern) on a last pass differs and separates from a zone/area printed by the remaining 50% of the dots on a current pass. In this case, a "cell" is a zone/area printed by each 50% of the dots. Moreover, the claims do not define wherein a swath is divided into cells of four inches in length, so this is not considered as a claimed limitation. As a result, Jones et al.'s suggestion to divide the swath into plurality of groups still reads on the claim language of the claimed invention.

Next, the applicants argued that Kojima teaches away from the teaching of Jones. The examiner does not agree with the applicants' argument. Even though, Kojima teaches uses of thermal printhead for printing, a technique for temperature control in an inkjet printhead or a



thermal printhead is applicable in both. Therefore, Kojima does not teach away from Jones' teaching.

Finally, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the knowledge that suggests to modify the method for controlling the temperature in the printer disclosed by Jones et al. such as measuring the temperature of each printhead prior to printing a swath and employing the measured temperature as an initial temperature in calculating an estimated peak temperature for each printhead in printing a first cell of the swath is clearly taught by Kojima (not from the applicants' disclosure); As a result, the reconstruction is proper.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
February 10, 2005

  
HAI PHAM  
PRIMARY EXAMINER